



REMARKS

Claims 1 and 24 have been amended to bring them into line with the amendments made during the International Phase in this application. No new matter is entered.

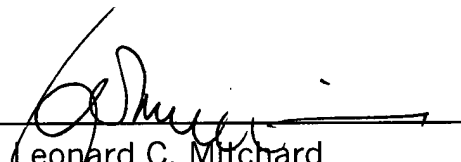
Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page/s is/are captioned "**Version With Markings To Show Changes Made.**"

Action on this application is awaited.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: _____


Leonard C. Mitchard
Reg. No. 29,009

LCM:lks
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100

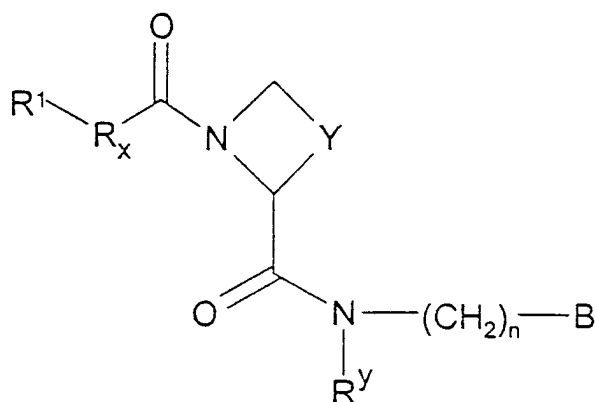
09509032-032100



VERSION WITH AMENDMENTS TO SHOW CHANGES MADE

IN THE CLAIMS

1. (Amended) A compound of formula I,



wherein

R¹ represents H, C₁₋₄ alkyl (optionally substituted by one or more substituents selected from cyano, halo, OH, C(O)OR^{1a} or C(O)N(R^{1b})R^{1c}) or OR^{1d};

R^{1d} represents H, C(O)R¹¹, SiR¹²R¹³R¹⁴ or C₁₋₆ alkyl, which latter group is optionally substituted or terminated by one or more substituent selected from OR¹⁵ or (CH₂)_qR¹⁶;

R¹², R¹³ and R¹⁴ independently represent H, phenyl or C₁₋₆ alkyl;

R¹⁶ represents C₁₋₄ alkyl, phenyl, OH, C(O)OR¹⁷ or C(O)N(H)R¹⁸;

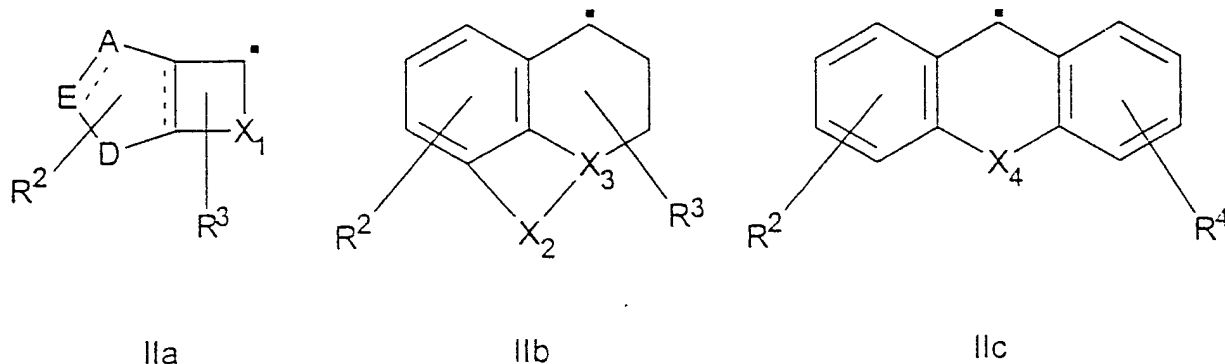
R¹⁸ represents H, C₁₋₄ alkyl or CH₂C(O)OR¹⁹;

R¹⁵ and R¹⁷ independently represent H, C₁₋₆ alkyl or C₁₋₃ alkylphenyl;

R^{1a}, R^{1b}, R^{1c}, R¹¹ and R¹⁹ independently represent H or C₁₋₄ alkyl; and

q represents 0, 1 or 2;

R_x represents a structural fragment of formula IIa, IIb or IIc,



wherein

the dotted lines independently represent optional bonds;

A and E independently represent O or S, CH or CH_2 (as appropriate), or N or $N(R^{21})$ (as appropriate);

D represents $-CH_2-$, O, S, $N(R^{22})$, $-(CH_2)_2-$, $-CH=CH-$, $-CH_2N(R^{22})-$, $-N(R^{22})CH_2-$, $-CH=N-$, $-N=CH-$, $-CH_2O-$, $-OCH_2-$, $-CH_2S-$ or $-SCH_2-$;

X_1 represents C_{2-4} alkylene; C_{2-3} alkylene interrupted by Z; $-C(O)-Z-A^1-$; $-Z-C(O)-A^1-$; $-CH_2-C(O)-A^1-$; $-Z-C(O)-Z-A^2-$; $-CH_2-Z-C(O)-A^2-$; $-Z-CH_2-C(O)-A^2-$; $-Z-CH_2-S(O)_m-A^2-$; $-C(O)-A^3$; $-Z-A^3-$; or $-A^3-Z-$;

X_2 represents C_{2-3} alkylene, $-C(O)-A^4-$ or $-A^4-C(O)-$;

X_3 represents CH or N;

X_4 represents a single bond, O, S, C(O), $N(R^{23})$, $-CH(R^{23})-$, $-CH(R^{23})-CH(R^{24})-$ or $-C(R^{23})=C(R^{24})-$;

A^1 represents a single bond or C_{1-2} alkylene;

A^2 represents a single bond or $-CH_2-$;

A^3 represents C_{1-3} alkylene;

A^4 represents C(O) or C_{1-2} alkylene;

Z represents, at each occurrence, O, $S(O)_m$ or $N(R^{25})$;

R^2 and R^4 independently represent one or more optional substituents

selected from C_{1-4} alkyl, C_{1-4} alkoxy (which latter two groups are optionally substituted by one or more halo substituent), methylenedioxy, halo, hydroxy, cyano, nitro, $S(O)_2NH_2$, $C(O)OR^{26}$, SR^{26} , $S(O)R^{26a}$, $S(O)_2R^{26a}$ or $N(R^{27})R^{28}$;

R^3 represents one or more optional substituents selected from OH, C_{1-4} alkoxy, C_{1-6} alkyl (optionally substituted by one or more halo group), or $N(R^{29a})R^{29b}$;

R^{25} , R^{29a} and R^{29b} independently represent H, C_{1-4} alkyl or $C(O)R^{30}$;

R^{26} represents H or C_{1-4} alkyl;

R^{26a} represents C_{1-4} alkyl;

R^{27} and R^{28} independently represent H, C_{1-4} alkyl or $C(O)R^{30}$, or together represent C_{3-6} alkylene, thus forming a 4- to 7-membered ring, which ring is optionally substituted, on a carbon atom that is α to the nitrogen atom, with an =O group;

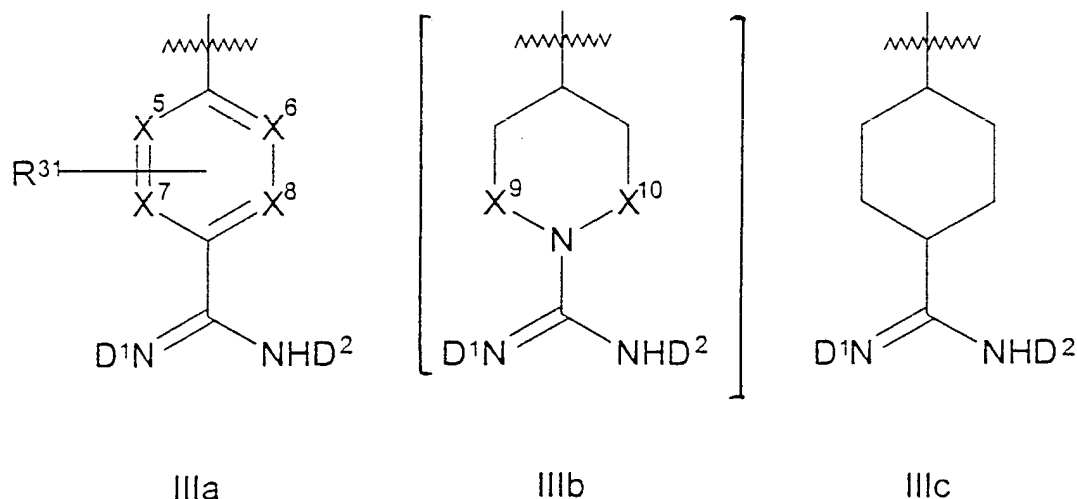
R^{21} , R^{22} , R^{23} , R^{24} and R^{30} independently represent, at each occurrence, H or C_{1-4} alkyl;

Y represents CH_2 , $(CH_2)_2$, $CH=CH$ (which latter group is optionally substituted by C_{1-4} alkyl), $(CH_2)_3$, $CH_2CH=CH$ or $CH=CHCH_2$ (which latter three groups are optionally substituted by C_{1-4} alkyl, methylene, =O or hydroxy);

R^y represents H or C_{1-4} alkyl;

n represents 0, 1, 2, 3 or 4; and

B represents a structural fragment of formula IIIa[IIIb/or]IIIc



wherein

X^5 , X^6 , X^7 and X^8 independently represent CH, N or N-O;

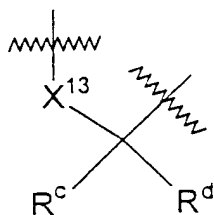
[X^9 and X^{10} independently represent a single bond or CH_2];

R^{31} represents an optional substituent selected from halo, C_{1-4} alkyl (which group is optionally substituted by one or more halo group), $N(R^{32})R^{33}$, OR^{34} or SR^{35} ;

R^{32} and R^{33} independently represent H, C_{1-4} alkyl or $C(O)R^{36}$;

R^{34} , R^{35} and R^{36} independently represent H or C_{1-4} alkyl; and

one of D^1 and D^2 represents H, and the other represents H, OR^a , NHR^a , $C(=X^{11})X^{12}R^b$, or D^1 and D^2 together represent a structural fragment of formula IVa:-



IVa

R^a represents H or $-A^5[X^{14}]_n[C(O)]_rR^e$;

R^b represents $-A^5[X^{14}]_n[C(O)]_rR^e$;

A^5 represents, at each occurrence, a single bond or C_{1-12} alkylene (which alkylene group is optionally interrupted by one or more O, $S(O)_m$ and/or

N(R^f) group, and is optionally substituted by one or more of halo, OH, N(H)C(O)R^g, C(O)N(R^g)R^h, C₃₋₇-cycloalkyl (which cycloalkyl group is optionally interrupted by one or more O, S(O)_m and/or N(R^f) group and/or is optionally substituted by one or more substituents selected from C₁₋₆ alkyl, C₁₋₆ alkoxy, halo, =O or =S), Het and C₆₋₁₀ aryl (which aryl and Het groups are themselves optionally substituted by one or more substituents selected from C₁₋₆ alkyl (optionally substituted by one or more halo substituent), C₁₋₆ alkoxy, halo, cyano, C(O)OR^g, C(O)N(R^g)R^h and N(R^f)R^g);

R^c and R^d both represent H; or one of R^c and R^d represents H or C₁₋₇ alkoxy and the other represents C₁₋₇ alkyl (which alkyl group is optionally interrupted by one or more O atoms); or R^c and R^d together represent C₃₋₈ cycloalkyl, which cycloalkyl group is interrupted by one or more O, S(O)_m and/or N(R^f) group;

R^c represents, at each occurrence, H, C₁₋₁₂ alkyl (which alkyl group is optionally interrupted by one or more O, S(O)_m and/or N(R^f) group, and/or is optionally substituted by one or more substituents selected from halo, OH, N(H)C(O)R^g and C(O)N(R^g)R^h), A⁷-C₃₋₇-cycloalkyl (which cycloalkyl group is optionally interrupted by one or more O, S(O)_m and/or N(R^f) group and/or is substituted by one or more substituents selected from C₁₋₆ alkyl, C₁₋₆ alkoxy, halo, =O and =S), A⁷-C₆₋₁₀ aryl or A⁷-Het (which aryl and Het groups are optionally substituted by one or more substituents selected from C₁₋₆ alkyl (optionally substituted by one or more halo substituent), C₁₋₆ alkoxy, halo, cyano, C(O)OR^g, C(O)N(R^g)R^h and N(R^f)R^g);

A⁷ represents a single bond or C₁₋₇ alkylene (which alkylene group is optionally interrupted by one or more O, S(O)_m and/or N(R^f) group, and/or are optionally substituted by one or more of halo, OH, N(H)COR^g and CON(R^g)R^h);

Het represents, at each occurrence, a five- to ten-membered heteroaryl group, which may be aromatic in character, containing one or more nitrogen, oxygen or sulphur atoms in the ring system;

n and r independently represent 0 or 1;

X¹¹, X¹² and X¹⁴ independently represent O or S;

X¹³ represents O or N(R⁵);

R^f represents, at each occurrence, H, C₁₋₄ alkyl or C(O)R^g;

R^g and R^h independently represent, at each occurrence, H or C₁₋₄ alkyl;
and

m represents, at each occurrence, 0, 1 or 2;

or a pharmaceutically acceptable salt thereof;

provided that:

(a) A and E do not both represent O or S;

(b) E and D do not both represent O or S;

(c) when R¹ represents OR^{1d} and X₁ represents -C(O)-Z-A¹,
-Z-CH₂-S(O)_m-A²- or -Z-C(O)-Z-A², then A¹ or A² (as appropriate) do not
represent a single bond;

(f) when X₄ represents -CH(R²³)-, R¹ does not represent OH;

(g) when A⁵ represents a single bond, then n and r both represent 0;

(f) when A⁵ represents C₁₋₁₂ alkylene, then n represents 1;

(g) when A⁵ represents -CH₂-, n is 1 and r is 0, then R^c does not represent
H; and

(h) the compound is not:-

(S)- or (R)-1-hydroxy-7-methoxytetralin-1-yl-C(O)-Pro-Pab;

(R)- or (S)-1-hydroxy-7-methoxytetralin-1-yl-C(O)-Pro-Pab;

(S)- or (R)-1-hydroxy-7-methoxytetralin-1-yl-C(O)-Aze-Pab x HOAc;

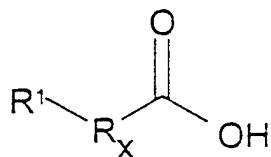
(R)- or (S)-1-hydroxy-7-methoxytetralin-1-yl-C(O)-Aze-Pab;
1-hydroxy-5-methoxytetralin-1-yl-C(O)-Aze-Pab x HOAc;
1-hydroxy-5,7-dimethyltetralin-1-yl-C(O)-Aze-Pab x HOAc;
1-hydroxy-7-aminotetralin-1-yl-C(O)-Aze-Pab x HOAc;
1-hydroxytetralin-1-yl-C(O)-Aze-Pab x HOAc;
7-methoxytetralin-1-yl-C(O)-Aze-Pab x HOAc;
(R)- or (S)-7-methoxy-1-methyltetralin-1-yl-C(O)-Aze-Pab;
4-hydroxy-6-methoxychroman-4-yl-C(O)-Aze-Pab x OAc;
(S)- or (R)-1-hydroxy-4-methoxyindan-1-yl-C(O)-Aze-Pab;
1-hydroxy-5-methoxytetralin-1-yl-C(O)-Aze-Pab(OH);
(S)- or (R)-1-hydroxy-7-methoxytetralin-1-yl-C(O)-Aze-Pab(OH);
4-hydroxy-6-methoxychroman-4-yl-C(O)-Aze-Pab(OH);
4-hydroxy-6-methoxychroman-4-yl-C(O)-Aze-Pab(OMe);
(S)- or (R)-1-hydroxy-7-methoxytetralin-1-yl-C(O)-Aze-Pab-
(C(O)OCH₂CCl₃);
(S)- or (R)-1-hydroxy-7-methoxytetralin-1-yl-C(O)-Aze-Pab-
(C(O)OCH₂CH₃);
7-methoxy-1-allyltetralin-1-yl-C(O)-Aze-Pab x HOAc;
(S)- or (R)-1-hydroxy-7-chlorotetralin-1-yl-C(O)-Pro-Pab;
1-*n*-propyl-7-methoxytetralin-1-yl-C(O)-Aze-Pab x HOAc;
6-chloro-4-hydroxychroman-4-yl-C(O)-Aze-Pab x HOAc;
4-hydroxychroman-4-yl-C(O)-Aze-Pab x HOAc;
6,8-dichloro-4-hydroxychroman-4-yl-C(O)-Aze-Pab x HOAc;
6-fluoro-4-hydroxychroman-4-yl-C(O)-Aze-Pab x HOAc;
4-hydroxy-6-methylchroman-4-yl-C(O)-Aze-Pab x HOAc;
8-chloro-4-hydroxy-6-methoxychroman-4-yl-C(O)-Aze-Pab x HOAc;
6-chloro-4-hydroxy-8-methylchroman-4-yl-C(O)-Aze-Pab x HOAc;
(S)- or (R)-1-hydroxy-7-methoxytetralin-1-yl-C(O)-Aze-Pab(O-C(O)-*i*-Pr);
(S)- or (R)-1-hydroxy-7-methoxytetralin-1-yl-C(O)-Aze-Pab(O-C(O)-Et);

(S)- or (R)-1-hydroxy-7-methoxytetralin-1-yl-C(O)-Aze-Pab(O-C(O)-Ch);
(S)- or (R)-1-hydroxy-7-methoxytetralin-1-yl-C(O)-Aze-Pab(O-allyl);
(S)- or (R)-1-hydroxy-7-methoxytetralin-1-yl-C(O)-Aze-Pab(O-Bzl);
(S)- or (R)-1-hydroxy-7-methoxytetralin-1-yl-C(O)-Aze-Pab-
(CO-O-methallyl);
1-hydroxy-7-aminotetralin-1-yl-C(O)-Aze-Pab(OH);
(S)- or (R)-1-hydroxy-7-methoxytetralin-1-yl-C(O)-Aze-Pab(O-Val);
(S)- or (R)-1-hydroxy-7-methoxytetralin-1-yl-C(O)-Aze-(Me)Pab; or
9-hydroxyfluoren-9-yl-C(O)-Aze-Pab x HOAc.

24. (Amended) A process for the preparation of formula I which

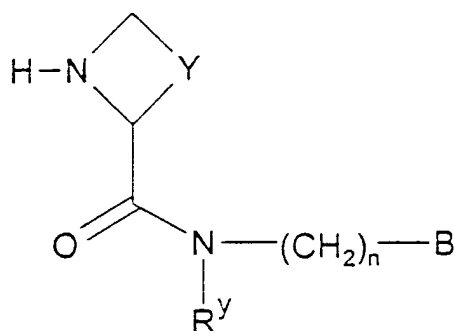
comprises:

(i) the coupling of a compound of formula IV,



IV

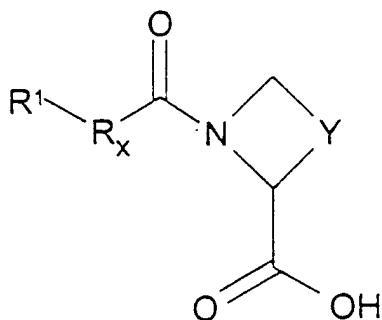
wherein R^1 and R_x are as defined in Claim 1 with a compound of formula V,



V

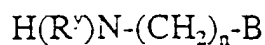
wherein R^y , Y, n and B are as defined in Claim 1;

(ii) the coupling of a compound of formula VI,



VI

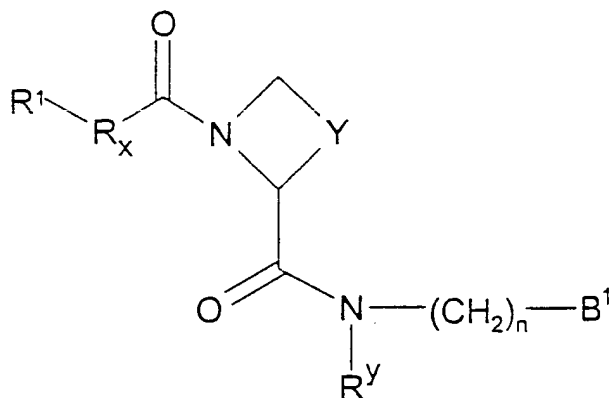
wherein R^1 , R_x and Y are as defined in Claim 1 with a compound of formula VII,



VII

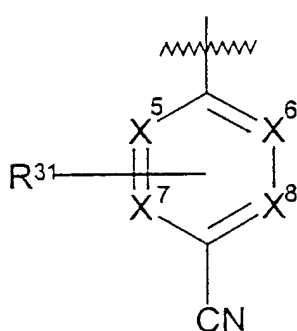
wherein R^y , n and B are as defined in Claim 1;

(iii) for compounds of formula I in which D^1 or D^2 represents OR^a or NHR^a , reaction of a compound of formula VIII,

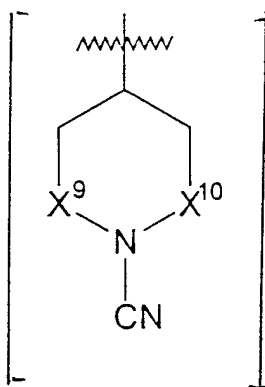


VIII

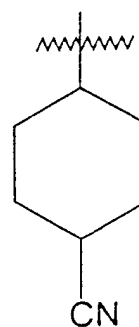
wherein B¹ represents a structural fragment of formula III d, III e or III f



III d



III e



III f

and R¹, R_x, Y, R^y, n, R³¹, X⁵, X⁶, X⁷ [X⁸, X⁹] and X¹⁰ are as defined in Claim 1 with a compound of formula IX,



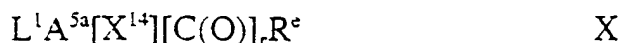
IX

wherein X^a represents O or NH and R^a is as defined in Claim 1;

(iv) for compounds of formula I in which D¹ or D² represents OR^a or NHR^a, reaction of a compound of formula I in which D¹ or D² (as appropriate) represents C(O)OR^{b1}, in which R^{b1} represents a protecting group with a compound of formula IX as defined above;

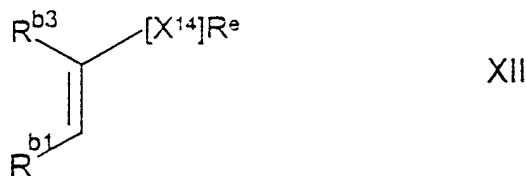
(v) for compounds of formula I in which D¹ or D² represents OR^a or NHR^a, R^a represents -A⁵[X¹⁴]_n[C(O)]_rR^c, in which A⁵ does not represent a single bond, and n represent 1, reaction of a compound of formula I in which D¹ or D² (as appropriate) represents OH or NH₂, with a compound

of formula X,



wherein L^1 represents a suitable leaving group, A^{5a} represents A^5 , as defined in Claim 1 except that it does not represent a single bond, and X^{14} , r and R^e are as defined in Claim 1;

(vi) for compounds of formula I in which D^1 or D^2 represents OR^a or NHR^a , R^a represents $-A^5[X^{14}]_n[C(O)]_r R^e$, in which A^5 represents C_{2-12} alkylene, which alkylene group is branched at the carbon atom that is α to the O or N atom of OR^a or NHR^a (as appropriate), and which group is optionally branched at the carbon atom that is β to that atom, n represents 1, r represents 0 and R^e is as defined in Claim 1, reaction of a compound of formula I in which D^1 or D^2 (as appropriate) represents OH or NH_2 , with a compound of formula XI,



or a geometrical isomer thereof, or a mixture of such geometrical isomers, in which R^{b1} and R^{b3} each represent H or an alkyl group, provided that the total number of carbon atoms provided by R^{b1} and R^{b3} does not exceed 10, and wherein X^{14} and R^e are as defined in Claim 1;

(vii) for compounds of formula I in which D^1 or D^2 represents OR^a or NHR^a , R^a represents $-A^5[X^{14}]_n[C(O)]_r R^e$, in which A^5 represents a single bond, and R^e represents A^7-C_{3-6} -cycloalkyl, in which A^7 represents a single bond, and the cycloalkyl group is interrupted by at least one O or S atom, which atom is between the carbon atom at the point of attachment to the O or NH group of OR^a or NHR^a , and a carbon atom that is α to that point of attachment, and which cycloalkyl group is optionally interrupted by one or more O or $S(O)_m$ group and/or optionally substituted by one or

more =O group, reaction of a compound of formula I, in which D¹ or D² (as appropriate) represents OH or NH₂, with a compound of formula XII,



wherein X¹⁵ represents O or S and X¹⁶ represents C₁₋₄ alkylene (which alkylene group is optionally interrupted by one or more O or S(O)_m group and/or optionally substituted by one or more =O group);

(viii) for compounds of formula I in which D¹ or D² represents C(X¹¹)X¹²R^b, reaction of a compound of formula I in which D¹ and D² both represent H with a compound of formula XIII,



wherein L² represents a suitable leaving group, and X¹¹, X¹² and R^b are as defined in Claim 1;

(ix) for compounds of formula I in which D¹ and D² together represent a structural fragment of formula IVa, reaction of a corresponding compound of formula I in which D¹ or D² represents OH or NHR^f (in which R^f is as defined in Claim 1), with a compound of formula XV,



wherein R^{c1} and R^{c2} both represent -OR^{c3}, in which R^{c3} represents C₁₋₃ alkyl, or together represent =O, and R^c and R^d are as defined in Claim 1;

(x) for compounds of formula I in which one or more of X⁵, X⁶, X⁷ and X⁸ represent N-O, oxidation of a corresponding compound of formula I in which X⁵, X⁶, X⁷ and/or X⁸ (as appropriate) represent(s) N; or

(xi) for compounds of formula I in which any one of Z, X₁, R², R⁴, A⁵, A⁷, R^c, R^d and/or R^e comprises or includes a S(O) or a S(O)₂ group, oxidation of a corresponding compound of formula I (or a compound corresponding to a compound of formula I) wherein Z, X₁, R², R⁴, A⁵, A⁷, R^c, R^d and/or R^e (as appropriate) comprise(s) or include(s) a S group;

(xii) for compounds of formula I in which D^1 and D^2 both represent H, removal of a OR^a , NHR^a or $C(=X^{11})X^{12}R^b$ group (in which R^a , R^b , X^{11} and X^{12} are as defined in Claim 1), or removal of a structural fragment of formula IVa as defined in Claim 1, from a corresponding compound of formula I; or

(xiii) introduction and/or interconversion of a substituent on an aromatic and/or non-aromatic, carbocyclic and/or heterocyclic ring in a corresponding compound of formula I.

001220 2E060550